Modern Monetary Theory: Cautionary Tales from Latin America

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According to *Modern Monetary Theory (MMT*) it is possible to use expansive monetary policy – money creation by the central bank (i.e. the Federal Reserve) – to finance large fiscal deficits that will ensure full employment and good jobs for everyone, through a "jobs guarantee" program. In this paper I analyze some of Latin America's historical episodes with MMT-type policies (Chile, Peru. Argentina, and Venezuela). The analysis uses the framework developed by Dornbusch and Edwards (1990, 1991) for studying macroeconomic populism. The four experiments studied in this paper ended up badly, with runaway inflation, huge currency devaluations, and precipitous real wage declines. These experiences offer a cautionary tale for MMT enthusiasts.†

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1. Introduction

During the last few years an apparently new and revolutionary idea has emerged in economic policy circles in the United States: *Modern Monetary Theory (MMT)*. The central tenet of this view is that it is possible to use expansive monetary policy – money creation by the central bank (i.e. the Federal Reserve) – to finance large fiscal deficits, and create a "jobs guarantee" program that will ensure full employment and good jobs for everyone. [1] This view is related to Abba Lerner's (1943) "functional finance" idea, and has become very popular in progressive spheres and among some candidates running in the Democratic Party primary. According to MMT supporters, this policy would *not* result in crowding out of private investment, nor would it generate inflation outbursts. [2]

MMT runs against received wisdom among economists, and has been resisted by Keynesians and monetarists alike. Respected and influential academics such as Paul Krugman, Kenneth Rogoff, and Larry Summers, among others, have stated that MMT makes little sense. Krugman has written that the principles behind MMT are "indefensible," and that the arguments made by its supporters are "sophistry."[3] According to Rogoff, MMT is "nonsense" based "on some fundamental misconceptions."[4] And Summers has contended that embracing "modern monetary theory is a recipe for disaster."[5]

MMT supporters have responded by saying that their critics don't truly understand how modern monetary economies work. According to them, in countries with a currency of their own, governments don't face a hard budget constraint; the government can always print additional money to pay for higher expenditures.[6] Since central banks have the monopoly power to issue money, doing so has no cost in terms of real resources. According to Stephanie Kelton (2019) "the government budget is not like a household budget *because the government prints its own money*."[7] Along similar lines, Forstater and Mosler (2005) have argued that in a "fiat money"

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[1] See Wray (2015) for details. The term "Modern" is supposed to be an inside joke, and refers to a statement made by Keynes in page 4 of "*A Treatise on Money*" (1930), where he says that for at least four thousand years money has been the creation of the State. Money is whatever the State accepts in payment of taxes. See Knapp (1904).
[2] See, for example, Forstater and Mosler (2005), Tymoigne and Wray (2013, 2015), and Wray (2013) and the literature cited therein. Scott Sumner has discussed MMT in depth in his blog. See Sumner and Horan (2019).
[3] https://www.nytimes.com/2019/02/25/opinion/running-on-mmt-wonkish.html
[4] https://www.project-syndicate.org/commentary/federal-reserve-modern-monetary-theory-dangers-by-kenneth-rogoff-2019-03
[5] https://www.washingtonpost.com/opinions/the-lefts-embrace-of-modern-monetary-theory-is-a-recipe-for-disaster/2019/03/04/6ad88eec-3ea4-11e9-9361-301ffb5bd5e6_story.html?utm_term=.a6e4c2bbafc1
[6] MMT has also been called "Neo-Chartalism." The term Chartalism was introduced by German economist G.F. Knapp in 1905 to refer to a theory where the value of money is not tied to the value of a commodity, such as gold. It is interesting to notice that Schumpeter (1954, p. 288) spelled the term as "Cartalism."
[7] https://www.barrons.com/articles/stephanie-kelton-wantsyou-to-rethink-the-deficit-1536853788. Emphasis added.

system the natural rate of interest is zero; the role of the monetary authority is to push the actual rate to zero, through the purchase of government securities. If long term equilibrium interest rates are equal to zero, then, $r < g$ in growing economies, and there would be no explosion of government debt.[8]

MMT supporters have argued that in order for these policies to work, the country in question does not need to have a "convertible currency"; all is needed is sovereign fiat money that economic agents *have* to use to pay taxes. Thus, even though it could be somewhat less effective than in advanced nations, MMT would still work in emerging countries, including in many of the nations of Asia and Latin America.[9]

Efforts to evaluate the merits of MMT have run into two types of difficulties: First, there is no unified description of how the MMT model is supposed to work. This is not due to a lack of publications. In fact, MMTers are prolific authors, and have published a large number of papers, pamphlets and books, including some primers. However, these works contain very few (if any) equations or diagrams; MMT authors have generally avoided the language that, for better or for worse, has become dominant in scholarly conversations among professional economists.[10] By doing this, MMTers have left themselves open to the criticism that their models lack clarity. For example, Paul Krugman (2019) recently wrote that MMT supporters "*tend to be unclear* about what exactly their differences with conventional views are, and also have a strong habit of dismissing out of hand any attempt to make sense of what they're saying."[11]

A second difficulty in evaluating MMT is that its supporters have offered very little *empirical evidence* on how the policy would function, especially in the medium and longer run.[12] Although some authors have argued that Japan during the last decade or so provides evidence that the approach works, most critics – including the Governor of the Bank of Japan, Haruhiko Kuroda – disagree with that contention.[13] When discussing the applicability of MMT to the United States, Neil Irwin (2019) has argued that it would be interesting to have the policies implemented in a

[8] For a skeptical view see, for instance, Sumner and Horan (2019).
[9] Wray (2015, pp. 124-129).
[10] See, for example, Forstater and Mosler (2005), Tymoigne and Wray (2013), and Wray (2015, 2018) and the literature cited therein.
[11] https://www.nytimes.com/2019/02/12/opinion/whats-wrong-with-functional-finance-wonkish.html. Emphasis added.
[12] There seems to be agreement that in the short run, and under especial circumstances, such a severe crisis similar to the one triggered by the subprime mortgages collapse, a short run policy based on massive purchases of government paper by the Central bank would make sense.
[13] https://www.bloomberg.com/news/articles/2019-04-10/kuroda-foe-says-japan-to-prove-modern-monetary-theory-a-mistake

small country first, as an experiment. He titled his piece "How About We Try Modern Monetary Theory in a Small Country First?" He wrote:[14]

> "It would be nice to have some proof of concept before it is put in place in the largest economy in the world — also home to the world's reserve currency… It would be genuinely fascinating to watch a small country — with its own currency — govern itself according to the [MMT] theory's principles... If those smaller countries can work out the kinks of economic governance in an MMT world, and achieve a higher standard of living, maybe then scale it up to a midsize country?"

It turns out that MMT – or some version of it – has been tried in the past in a number of emerging countries. Although most cases have taken place in Latin America, there have also been episodes in other parts of the world, including in Turkey and Israel. MMT-type policies were also attempted briefly in France during the Mitterrand presidency. Almost every one of the Latin American experiments with major central bank-financed fiscal expansions took place under populist regimes, and all of them ended up badly, with runaway inflation, huge currency devaluations, and precipitous real wage declines. In most of these episodes – Chile, Argentina, Brazil, Nicaragua, Peru, Venezuela – policy makers used arguments similar to those made by MMTers to justify extensive use of money creation to finance very large increases in public expenditures.

In this paper I analyze some of Latin America's episodes with MMT-related policies, and I show that all these cases ended up in major macroeconomic disasters. The analysis uses the framework developed by Dornbusch and Edwards (1990, 1991) for studying macroeconomic populism.

The rest of the paper is organized as follows: In Section 2 I present the basic principles of Latin American populism, and compare them to some of the views of MMTers. I argue that most Latin American populist experiences go through four phases: they begin well, and usually generate a short term increase in output, employment and wages. However, macroeconomic imbalances and inflationary pressures eventually appear, and enthusiasm turns into concern. Ultimately, there is a major crisis. In Section 3 I analyze four specific Latin American episodes with major central bank-financed fiscal expansions: Chile during President Salvador Allende's socialist experiment (1970-1973); Peru during the first Alan Garcia presidency (1985-1990); Argentina during both the Kitchener and Fernandez presidencies (2003-2015); and Venezuela, under Hugo Chávez and Rafael Maduro (1998-now). The most important point made in this section is that in all of these episodes' policies similar to those espoused by MMTers were implemented. I show that at the end of these episodes' real wages were significantly lower that at the beginning. These are the

[14] https://www.nytimes.com/2019/03/07/upshot/modern-monetary-theory-small-country-first.html

"cautionary tales" referred to in the title of this paper. Finally, in Section 4 I provide some concluding remarks.

2. Latin American Populism

2.1 The mechanics of Latin American populism and MMT

Macroeconomic populism is usually defined as a set of policies aimed at redistributing income by running high fiscal deficits, financed (mostly) through an expansive monetary policy.[15] In every Latin American experience with populist policies the government granted wage increases – both public sector and minimum wages – that exceeded significantly what was justified by improvements in productivity. Just as MMTers, populist politicians present heterodoxy as the solution to the nation's ills, and in particular to the suffering of the middle and lower classes. [16]

For populists, one of the features of capitalist economies is the existence of substantial idle capacity. Thus, in their view, large and persistent fiscal deficits do not result in serious imbalances, high inflation, and, eventually, in crises. For populists the contrary is true: large fiscal deficits expand demand and encourage production, allowing firms to exploit economies of scale and to use resources fully. For them the combination of large deficits with redistributive policies result in a decline in inflation. Moreover, for populists, as for MMTers, the most efficient and effective way of financing the fiscal deficit is through money creation by the central bank.[17] Populists tend to dismiss possible collapses in the demand for domestic money, and increases in the velocity of circulation.

These views are clearly captured by the following quote from Daniel Carbonetto (1987, p.82), the economist behind Alan Garcia's populist policies in Peru in the second half of the 1980s: "If it were necessary to summarize the strategy adopted by the government since August 1985 with two words, they are *control* (meaning control of prices and costs) and *spend*, transferring resources to the poor so that they increase consumption…" Carbonetto then added that budget constraints had to be ignored:

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[15] See Dornbusch and Edwards (1990, 1991). Edwin Williamson (1992, p. 347), defined populism as "the phenomenon where a politician tries to win power by courting mass popularity with sweeping promises of benefit and concessions to the lower classes." Political scientist Michael L. Conniff (1982, p. 82) pointed out that "populist programs frequently overlapped with those of socialism." More recently, Acemoglu, Egorov, and Sonin (2012, p. 771) stated that populist "politicians use a rhetoric that aggressively defends the interests of the common man against the privileged elite." Eichengreen (2018, p.1) wrote that populism is a "political movement with anti-elite, authoritarian, and nativist tendencies." Parts of this section draw on Edwards (2019).

[16] In Dornbusch and Edwards (1991), case studies for Argentina, Chile, Peru, Colombia, Brazil, and Nicaragua are presented.

[17] See Chapter 8 in Edwards (2010).

> "It is necessary to spend, even at the cost of a large fiscal deficit, because, when this deficit transfers public resources to increase consumption of the poorest, they demand more goods and this will bring about a reduction in unit costs. Thus the deficit is not inflationary."

This statement, is very similar to what Stephanie Kelton, one of the most prominent supporters of MMT stated in 2019: "the government budget is not like a household budget *because the government prints its own money*."[18] It is also similar to what Wray (2015, p. 104) writes in his primer on MMT: "The following statements do *not* apply to a sovereign currency issuing government… Governments have a budget constraint… [g]overnment deficits drive interest rates up, crowd out the private sector and lead to inflation."

In addition to rejecting fiscal balance and sound monetary policy, Latin American populists reject markets, competition, and globalization. They believe in price and exchange controls, high minimum wages, high import tariffs, and large subsidies, mostly for food and public transportation. They support state-owned-enterprises, and they favor nationalizing large multinationals (often associated to natural resources, such as oil and mining). In some instances, Latin American populists have borrowed from Marxist ideology, as was the case with Hugo Chavez's "Socialism of the 21 century" program.[19]

But, it would be a mistake to believe that populists "like" or "favor" inflation. They don't. In fact, before taking power, populist politicians usually declare that one of their fundamental objectives is to reduce or eliminate inflation. They state that price increases benefit large firms, and hurt the working class. For instance, in Chile, the Unidad Popular electoral platform of 1970 stated that a main goal of the "popular government" was to achieve "price stability."[20] In repeated speeches President Salvador Allende pointed out that price controls would play a key role in defeating inflation.[21] For President Salvador Allende the fact that the quantity of money increased by 124% during his first year in office was not a problem; on the contrary, for Allende monetary expansion played a key role in helping finance Chile's move towards Socialism.[22] MMT supporters also assert that one of their main goals is to achieve stability. According to Wray (2015, p. 244) "MMTers fear inflation, too. Indeed, price stability has always been one of the two key missions of [the MMT approach]."

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[18] https://www.barrons.com/articles/stephanie-kelton-wantsyou-to-rethink-the-deficit-1536853788. Emphasis added.

[19] Many of their views are associated with the traditional "structuralism approach" to economic development, espoused by thinkers such as Raul Prebisch.

[20] http://www.abacq.net/imagineria/frame5b.htm#05

[21] Interestingly, Abba Lerner, an inspirations for Matters, argued that the most efficient way to deal with inflationary pressures was the use of price controls.

[22] See the various speeches on the economy in Allende (1989).

In the vast majority of Latin American populist episodes, the populist leader came to power after a major crisis. In many cases, the IMF had been called to bring order into the economy. In every case, the IMF imposed an "austerity-based" adjustment program, which exacerbated the sense of frustration among the country's citizens, and in particular among the middle and lower classes. Although a structurally unequal distribution of income is not a requirement for the emergence of populism, populist rhetoric is more attractive in countries with significant income disparities, or in countries were inequality has raised during the immediate past.[23]

The importance of initial conditions in the emergence of populist regimes is illustrated clearly in some of the most salient populist experiences in Latin America. For example, in Argentina, the administration of President Nestor Kirchner came to power after the major currency and banking crisis of 2001-02, when the currency board collapsed. As a result of this crisis unemployment skyrocketed above 25%, and the peso lost almost 80% of its value in three years. In Venezuela, the populist policies of Hugo Chávez (later continued by Nicolas Maduro) were put in place after a succession of economic and political crises. The initial event that gave impetus to the populist movement took place almost ten years before the accession of Hugo Chávez to power. On February 27 1989, and as a result of an announced 30% increase in public transportation fares, riots erupted in Caracas.[24] The military were called in to reestablish order. After five days of violence, more than 300 people had been killed. This crisis – the episode is known as the "*Caracazo*" – set the stage for Colonel Hugo Chavez attempted coup in February of 1992, and to his eventual election as President in 1998, when he won the election by a landslide, trouncing his opponent by more than 16 percentage points. (Hausmann and Rodriguez 2016).

2.2 The four phases of Latin American populism

Most macroeconomic populist experiments go through four distinct phases that span from euphoria to collapse. The length of the cycle depends on a number of factors, including the evolution of the terms of trade, political institutions, the availability of foreign financing by friendly nations, and the degree of political repression.[25]

During ***Phase 1***, stimuli to aggregate demand are met by increased capacity utilization and higher imports. It is during this phase that policies very similar to those espoused by MMT are first put in place. Government expenditures increase rapidly, and massive income transfers are implemented. Public sector wages and minimum wages are raised, and large public sector investment projects enacted. These policies are financed by a combination of easy money that flows from the central bank, increases in government debt, and foreign resources that come from

[23] Edwards (2010), Chapter 8.
[24] The increase in transportation fares was a component of an IMF program.
[25] A formal model that captures these cycles is presented in Dornbusch and Edwards (1990). Acemoglu et al (2012) develop a more general model that generates this type of populist dynamics.

the country's international reserves. In some cases, such as Peru in the mid-1980s and Argentina in the early 2000s, the restructuring of international debt provides some additional financing space.[26] Some foreign financing may also come from friendly countries. During this early phase the populist views are vindicated, or so it seems. Prices are held more or less in line through increased imports, the depletion of inventories, and, some kind of price guidance and controls. The population is happy, as incomes and wages go up, and the populist leader repeatedly makes the point that orthodox economics and its supporters are wrong. In some cases –Argentina during the early 2000s, and Venezuela under Chávez are good examples –, an improvement in the terms of trade provides additional financing.

During ***Phase 2*** the consequences of the heterodox policies begin to show up, and bottlenecks and imbalances emerge. International reserves become dangerously low, foreign exchange becomes scarce and there are significant forces for the currency to depreciate rapidly. Exchange controls are introduced – France under Mitterrand, in 1984, is a good example from outside of Latin America. In some cases, such as Argentina during President Fernandez, traditional exports are taxed. In spite of these measures, prices continue to rise. The populist response is to decree generalized price controls (price controls are considered by MMTers an integral part of the policy kit; Wray 2015, Chapter 8.1). Unions ask for higher salaries, and indexation practices are adopted. The central bank continues to lend vast amounts to the public sector, helping maintain the experiment alive. The economy enters into an inflationary spiral. A black market for necessities, including food, develops and a parallel market for foreign exchange appears.

Phase 3 is characterized by a deepening of imbalances and a worsening of economic conditions. Inflation accelerates, generally moving to the three or four digits' terrain. Fiscal dominance becomes more acute, as the central bank continues to finance the government. The frequency of price adjustments through indexation increases, first to quarterly and then to monthly intervals. Pervasive indexation tends to worsen the fiscal accounts through the so-called "Olivera-Tanzi effect." Government expenditures increase according to the indexing formula, while tax revenues are collected based on lagged income and profit figures. Consumers ditch the domestic currency, and foreign exchange becomes the medium of exchange. However, since the government requires that taxes are paid in domestic currency, the local monies (pesos, soles, escudos, bolívares, córdobas) do not disappear completely. Demand, however, falls very rapidly, with velocity of circulation increasing significantly. The disparity between inflation (very high) and exchange rates (depreciating more slowly) intensifies the extent of real exchange rate overvaluation.[27]

[26] Peru is one of the very few countries that have ever defaulted on the IMF.

[27] In some cases, such as Venezuela under Nicolas Maduro, economic conditions become so bleak that the population becomes undernourished and outmigration increases significantly. Rodriguez (2008).

During ***Phase 4*** the populist regime is finally replaced. Historically, in Latin America it was quite common that the end of the populist regime happened through a coup d'état. More recently, however, this has not been the case. Be it as it may, the new post-populism government faces a very fragile economy and frequently a mess. Inflation is usually (very) high, international reserves are non-existing, exports are at an all-time low, the government debt is in default, and the real economy is replete with distortions. When the new government comes into power, real incomes and wages are often below what they were at the beginning of the experiment.

3. Four populist episodes in Latin America: Lessons for MMT supporters

In this Section I analyze four of Latin America's best known populist episodes: Chile during President Salvador Allende's socialist experiment from 1970 through 1973; Peru during the first Alan Garcia administration (1985-1990); Argentina during the administrations of Presidents Nestor Kirchner and Cristina Fernandez de Kirchner (2003-2015); and Venezuela during the Presidents Hugo Chavez and Nicolas Maduro governments (1998-now). Although each of these cases is unique and full of complexities, the four of them share the populist pattern discussed above. The case of Chile, is possibly the most dramatic one, as the experiment with populist-socialist policies of President Salvador Allende ended up in a violent coup which was followed by a 17-year dictatorship. In both Peru and Venezuela, the central bank-financed fiscal expansions ended up in hyperinflation. In Peru the rate of inflation peaked at almost 8,000%, and the International Monetary Fund has forecasted that inflation in Venezuela will be almost one million% in 2019. As noted above, the Argentine populist experiments of 2003 was triggered by the precipitous failure of a currency board experiment which lasted 10 years. Between 1991 and 2001 the peso was strictly pegged to the dollar at a one-peso-one-dollar exchange rate. The collapse of that particular attempt to fix the exchange rate resulted in a major jump in unemployment, and significant political upheaval, including the resignation of President Fernando de la Rua.[28] As noted, Venezuela's episode had its roots in the deteriorating social and economic conditions since the Caracas riots of 1992.[29]

The four countries studied in this Section had a sovereign currency, and thus could (and did) follow the type of policies recommended by MMT economists. In addition, these nations satisfy another requirement for MMT: in all cases the exchange rate was not strictly fixed; the price of foreign currency was adjusted frequently (in some cases daily) through a crawling rate regime or

[28] A number of papers have been written on these cases. The following is a short list of works. Each of them contains a detailed bibliography on these cases. On Chile see Larrain and Meller (1991), on Peru see Lago (1991), on Argentina and Venezuela see Edwards; on Venezuela, Haussmann and Rodriguez (2014); on Argentina, Bluestein (2006).

[29] In Edwards (2010) I discuss Chile, Argentina and Venezuela. For Peru see Dornbusch and Edwards (1990) and Lago (1991). For Chile, see also Edwards and Edwards (1991).

a "dirty float" system.[30] In every one of the episodes exchange controls of one type or another were eventually put in place in an effort to slow down currency depreciation.[31]

I begin the discussion by presenting data on economic growth, and documenting the transition from euphoria to distress. I then discuss the expansion of fiscal policy financed by central bank money creation, and the resulting inflation outbursts. The Section ends with an analysis of the evolution of social conditions. I show that in three of the four cases, when the populist regime was replaced, real wages were lower than when the populist leader took over.

3.1 Growth and populism phases

In Figures 1-A through 1-D I present data on GDP growth for the four episodes. There are two (red) vertical lines in these graphs. The first one corresponds to the initial year of the populist episode; the second red line refers to the first year of the post-populist regime. The similarities across cases are quite remarkable; the different phases of populist experiments are easy to detect in each one of these Figures.

- In the four episodes it is possible to see that the initial conditions are characterized by either very low or negative growth. As noted, these depressed circumstances give the populist leader the opportunity to present his/her nationalistic, anti-globalization and anti-elite program, and to get to power. In Chile, growth in 1970 was 2.0%, which meant that per capita growth was zero.[32] In Peru and Argentina, there were IMF programs at the time García and Kirchner took over the respective governments. In both cases growth was negative, and in both cases the populist rhetoric criticized the Fund as an institution that spreads poverty through the developing world. In Peru, economic conditions were also negatively affected by the El Niño climatic phenomenon, which resulted in some of the worst flooding in the country's history.[33] In Venezuela, growth was negative the year Chávez won the elections. Depressed initial conditions in Venezuela were the result of a succession of failed adjustment programs – some supported by the IMF–, and a decline in

[30] Wray (2015) has stated that MMT policies work better if the central bank does not make a firm commitment to exchanging the sovereign money into a commodity (gold) or another currency.
[31] For a list of requirements for MMT to work, see Wray (2015).
[32] As will be seen below in 1970 inflation in Chile was a very high 35%. This was an important component of the sense of crisis in the country. In fact, as mentioned earlier, achieving price stability was one of President Allende's more important goals. See Edwards and Edwards (1991).
[33] Alan García became President in July 1985. During 1984 Peru had signed an IMF program, for 104 million SDRs. Peru stopped making payments to the IMF in 1987. Argentina entered into IMF programs in 2000 and 2001. On Argentina, see, Bluestein (2005). Venezuela obtained IMF support in 1996 (300 million SDR), under the presidency of Rafael Caldera, Hugo Chavez's predecessor. As in the cases of Peru and Argentina, this program called for fiscal austerity, cutting subsidies, and currency devaluation.

the price of oil. Memories of the repression and deaths during the *Caracazo* also contributed to the support for Chavez and his program.[34]

- As may be seen from these Figures, Phase 1, with its booming growth, follows the launching of the populist programs. In Chile the economy grew at an impressive 9% during the first year of President Salvador Allende's Unidad Popular government. Peru saw its GDP growth jump to 12% in 1986, one year after Alan García's election. In Argentina and Venezuela there was also important GDP recovery after the accession to power of the new leaders. In these two countries it is possible to detect the negative effect of the global financial crisis of 2008-2009. However, there is a recovery, and the good times continued for a few additional years. In both of these cases, the positive-growth phase was rather longer than usual. This was thanks to very positive terms of trade; prices of commodities, including oil and soybeans were very high during the early years of these episodes (Edwards, 2019).

- Eventually, in every one of the four countries the day of reckoning arrives, and Phase 3, with the collapse in growth becomes a reality. As may be seen, in Chile there was negative growth in 1972, the second year of the Allende administration. In Peru growth was negative 9 % in 1989, towards the end of the Alan Garcia presidency. In Argentina there was negative growth in 2012, 2014, 2015, and 2016, and in Venezuela de economy collapsed in 2014. During Phase 4 the new post-populist government had to put in place policies aimed at reducing inflation and reigniting growth.

3.3 Monetary policy, fiscal imbalances and inflation

As noted, in all of these episodes there were massive fiscal expansions financed by money creation by the central bank. In Chile, the Unidad Popular government also nationalized the banking sector, as a way to facilitate the flow of credit to newly nationalized companies. In Peru, Alan García tried to follow Allende's footsteps and nationalize the banking and financial sectors. However, there was a massive popular opposition, and after weeks of protests led by novelist and future Nobel Prize winner Mario Vargas Llosa, the government gave up on the attempt.[35]

In Tables 1 through 4 I present data on a number of key macroeconomic variables: public sector balance as percentage of GDP, rate of growth of the monetary base, annual inflation rate, current account balance over GDP, and real GDP growth. In addition to the boom to bust dynamics of growth discussed above, several results stand out from these Tables.

[34] Edwards (2010).
[35] Larrain and Meller (1991), Edwards and Edwards (1987).

- *Fiscal expansion*: In all cases the fiscal deficit becomes very large during the episode. In two of the cases (Chile and Peru) a large imbalance develops immediately after the populist leader takes over. In the other two episodes, it takes some time for the deficits to explode; but eventually it does happen. In Argentina and Venezuela this delay is due to the extraordinarily high export prices during the early years of these experiments (Edwards 2019).

  In the case of Chile, I present two series for fiscal balance. The first one refers to the central government accounts, and shows that in 1973, the last year of the Allende administration, the deficit was almost 25% of GDP. The next column presents data for the "consolidated public sector" for 1970-1973, and includes state owned enterprises. As may be seen, in 1973 this measure reached and astonishing negative 30% of GDP.

  In Peru, in 1983, two years before Alan García got to power, there was already a huge deficit: 11.6% of GDP (Table 2). In 1984, President Fernando Belaunde decided to call in the IMF, and an orthodox stabilization program was put in place. The data in Table 2 show that between 1983 and 1985 there was a draconian fiscal adjustment that amounted to 8% of GDP. This drastic fiscal correction generated a substantial jump in unemployment and a precipitous decline in real wages -- 39% between 1982 and 1985 --, and paved the way to Alan García's electoral success in 1985. One of the first measures taken by García was to suspend the IMF program, and to go back to very expansive fiscal policies. As may be seen in Table 2, in Peru the deficit exceeded 10% of GDP in 1987, 1988 and 1989. In 1990 it was slightly down to 8% of GDP. Throughout these years it was mostly financed by money creation by the central bank. (Martinelli and Vega, 2018).

  Table 3, on Argentina, shows that during the early years of the Kirchner administration the public sector ran a surplus. This was the result of two forces: on the one hand, high commodity prices and stiff export taxes contributed to increased government revenues, and on the other, the default on foreign debt provided some additional fiscal space. However, as may be seen, towards the end of the experiment the deficit increased rapidly, and by 2015 it had reached 6% of GDP. The picture for Venezuela, in Table 4, is in some ways similar to Argentina. With the exceptions of 1998 and 2001, the early years of the Bolivarian Revolution were characterized by (relatively) balanced public sector finances. However, the fiscal deficit surpassed the 3% of GDP mark in 2008, and from that point onward increased markedly every year, reaching a remarkable 31% of GDP in 2017. The initial fiscal imbalance in 2008-2010 coincided with a sharp decline in oil prices in the global market place. However, when oil prices recovered in 2011, Venezuela made no attempt to adjust public finances. The decision was made to finance the deficit with money created by the central bank. In 2017 the deficit it reached almost 32% of GDP,

even higher than the consolidated fiscal deficits for Chile in the last year of the Allende administration.

- *Money supply growth*: The data in these tables show a clear connection between the eruption of very large fiscal deficits and a jump in the rate of growth of the money supply. This, of course, reflects the fact that in every one of these cases the central bank financed the expansion of public expenditures through the purchase of government debt. This was a deliberate component of these populist economic programs. This is illustrated by the following quote from García (1972, p. 102) one of the economists behind President Salvador Allende's economic program in Chile: "[the policy] was based on the simultaneous control of prices, wage increases, and increase in the public sector deficit…" He then added (p. 104): "monetary and credit policy provided the financing for fiscal expansion and the deficit…"[36] It is, precisely this close relationship between fiscal deficits and money creation what makes these episodes particularly germane to the debate on the merits and prospects of Modern Monetary Theory.

- *Inflation*: The data in these tables show that inflation was, eventually, extremely high in the four episodes. In Chile it surpassed 500% in 1973; in Peru, it reached hyperinflation levels – it exceeded 7,000% in 1990 –, and in Venezuela it surpassed 1,000% in 2017. The IMF expects inflation in Venezuela to reach the one million percent annual mark in 2019! For Argentina, there are two series: "official" and "adjusted." The latter was calculated by independent economists, and it is generally deemed to capture the evolution of prices more accurately. Both indexes show that inflation was significantly below Chile, Peru and Venezuela, but still a very high 41% in 2016.[37] As noted above, very high inflation feedbacks into the fiscal deficit through the Tanzi-Olivera effect. When inflation is very high, indexation tends to become generalized, and wages are adjusted at increasingly shorter intervals. This means that the government wage bill – which in all of these countries was very substantial – increased rapidly, while taxes were assessed and paid based on lagged (and much lower) prices. In all of these cases a collapse in the demand for domestic money (or an increase in velocity) contributed significantly to the explosion of inflation. In Chile, for example, velocity in 1973, at the end of the Allende government, was 24 "times" per year, which twicwe as high as the historical average of

[36] The original is in Spanish. This is my own translation.

[37] In all of these cases official inflation underestimated "true" inflation. As the experiments moved forward and prices were controlled, black markets for certain goods developed. Official statistics are based on controlled prices, and not on market prices. Starting in 2007 the IMF stated that official price indexes in Argentina did not reflect inflation pressures in a reliable manner.

12 times.[38] One of the most serious weaknesses of MMT is that it tends to ignore important aspects of the demand for money. Wray (2015, p. 254), for example, declares that he is surprised by the notion that during hyperinflation economic agents reduce their holdings of domestic money to a minimum. The absence of a prominent role the demand for money in the theoretical construct of MMT is surprising. In Chapter 13 of the General Theory Keynes explains that people want to hold money for three motives: transactions-motive, precautionary-motive, and speculative-motives (Keynes 1936, p.168). He further argues that the demand for money (or liquidity preference) is a function of the rate of interest He explicitly writes $M = L(r)$. Economists have known, since at least Irving Fisher, that higher inflation results in higher r. Thus, a rapid increase in inflation will generate a greater excess supply for money, which will be mirrored by an excess demand for goods.

- *External balance*: The data in these tables show that current account deficits were not very large. In fact, in Venezuela there are surpluses until 2014. The absence of very large external imbalances was due to a combination of factors, including the high prices of exports in Argentina and Venezuela during most of their episodes, and the difficulty to find international sources of financing. One of the realities of most populist regimes is that capital flows reverse soon after investors realize that the policy stance is inconsistent. The imposition of severe controls on capital outflows usually follows.[39] Although the current account deficits were not exceedingly high, at the end of the four episodes the central bank had virtually no international reserves.

As the data presented above show, the duration of the four episodes is different. Chile's Unidad Popular government lasted only 3 years. On September 11, 1973, president Salvador Allende was overthrown by a violent coup led by General Augusto Pinochet. The Peruvian experiment lasted 5 years; in Argentina it went on for 11 years, and in Venezuela it is still going on after two decades. There are political and economic reasons for these disparities. The most important economic factor is the external environment and export prices. The Allende government was affected by a sharp decline in the price of copper. During the Peruvian experiment, the international price of fishmeal, Peru's main export, fell from USD 1,024 per metric ton in the third quarter of 1983, to USD 614 per metric ton in the first quarter in 1989, a decline of 40%.

[38] These numbers refer to the number of times the stock of money turns over every year. An alternative way of looking at this problem is to calculate what fraction of nominal GDP is held in the form of domestic money. This, of course, corresponds to "Cambridge's k." When inflation is very high, this ratio collapses. For the data on Chile, see, Diaz et al (2010).

[39] On reversals of capital flows and crises (including populist crises) and the imposition of controls, see, for example, Cowan, De Gregorio, Micco and Neilson (2005), and Edwards (2004).

Chile and Peru contrast markedly with the cases of Argentina and Venezuela. Between January 2003 and July 2012, international prices for soybeans, one of Argentina's main exports, increased from USD 208 per metric ton to USD 612 per metric ton. The price of crude oil, Venezuela's main export (Argentina is also an oil exporter), jumped from USD 20 per barrel in 2002 to USD 130 in 2008.

From a political point of view there are two main reasons behind the longer duration of more recent episodes. First, since the 1990s new constitutions approved in a number of countries – Colombia, Venezuela, Ecuador, Bolivia and Nicaragua – have made it is easier for the head of state to be reelected for multiple periods in office.[40] Second, in some of these experiments – most notably in Venezuela and Nicaragua – the political regime became increasingly authoritarian, and resorted to repressive tactics in order to suppress political dissent. Human rights organizations, such as Amnesty International, decried these practices.[41]

3.4 Real wages and exchange rates

An important question is what happened to real wages during these episodes. The answer is summarized in Table 5. In Chile, Peru and Venezuela there were steep declines. In Chile, average real wages fell by 39% between 1970 and 1973. In Peru real wages went down by 41% between 1985 and 1989. In Venezuela real wages declined 21% between 1999 and 2013; more recent reliable data are not available, but given the hyperinflation and generalized black markets for almost every item, including food and medicines, most experts have argued that there has been further precipitous deterioration. In Argentina, in contrast, there was a 13% increase in average real wages between 2002 and 2016. This was the result of a combination of three factors: the highly depressed salaries at the end of the currency board period (2002), the very significant improvement in export prices during most of the experiment, and the fact that although inflation was very high (41%), hyperinflation was avoided.[42]

In all of these cases there were also very severe currency devaluations. In Chile, for example, the peso lost 93% of its value in 1973 alone, and the price of the foreign exchange increased at a three digit pace until 1977. In Peru the price of foreign currency jumped by more than 8000% in 1989-1990. In 1991, there was a need to introduce a new currency, with fewer zeros. In Argentina the price of foreign exchange went from approximately 3 pesos per dollar in the

[40] On neo populist constitutions in Venezuela, Ecuador and Bolivia, see Edwards (2010).
[41] In its 2017/2018 report of human rights Amnesty International states: "In Venezuela, hundreds of people were arbitrarily detained and many more suffered the consequences of excessive and abusive force used by security forces in response to widespread public protests against rising inflation and shortages of food and medical supplies." Repressive policies were also implemented by Nicaragua's Daniel Ortega after 2017.
[42] The data for Chile are from Larrain and Meller (1991), and refer to the average for blue collar and white collar workers. The figures for Peru are from Dornbusch and Edwards (1990). For Argentina and Venezuela, the data are from the U.N. Economic Commission on Latin America.

period 2003, to over 20 pesos per dollar in 2016. In Venezuela the loss of value of the Bolivar has been absolute, and the government has tried to introduce a new crypto currency that would replace it. In all cases currency depreciation helped fuel inflation by putting upward pressure on the price of tradables. Interestingly, this regularity of Latin American experiments is not considered as a serious problem by MMTers. In their writings MMT theorists mostly ignore issues related to "pass through," a question that has been at the forefront of studies on macroeconomic policy and inflation in open economies for many decades.

4. Concluding remarks

The analysis presented in this paper shows that in these four Latin American episodes, policies similar to those advocated by MMTers ended up badly. Incomes collapsed, there was a runaway inflation, and the currency lost most of its value. In addition, in three out of the four cases, real wages declined significantly. It should be noted that these outcomes are not unique to these four cases. Indeed, as is documented in the volume by Dornbusch and Edwards (1991), similar patterns were observed in populist episodes in Brazil and Nicaragua, and in earlier times in Argentina (during the Juan Domingo Perón administration).

Of course, someone could argue that MMT is only meant to work in advanced nations such as the U.S. This, however, is not what MMT supporters have asserted. According to them, although they are more constrained than advanced nations, emerging countries can still benefit significantly from MMT policies. Wray (2015, p. 127-128) writes: "[Y]es, the United States (and other developed nations to varying degrees) is special, but all is not hopeless for the nations that are "less special". To the extent that the domestic population must pay taxes and other obligations in the government's currency, the government will be able to spend its own currency into circulation." It could also be argued that in the four episodes discussed in this paper the government authorities went overboard, and abused the central bank power to use monetary policy to finance fiscal expansion. This type of argument is based on the assumption that there is some kind of threshold that cannot be surpassed. However, MMTers have generally failed to make this, or to explain at what stage things can get out of hand.

Be it as it may, the episodes presented in this paper provide a clear cautionary tale for MMT enthusiasts. Neil Irwin asked to see some evidence on how MMT-type policies worked in small countries. The stories presented in this paper show that in a variety of Latin American countries, at very different points in time – the episodes span from 1970 to 2019 -- things did not turnout as MMTers had promised.

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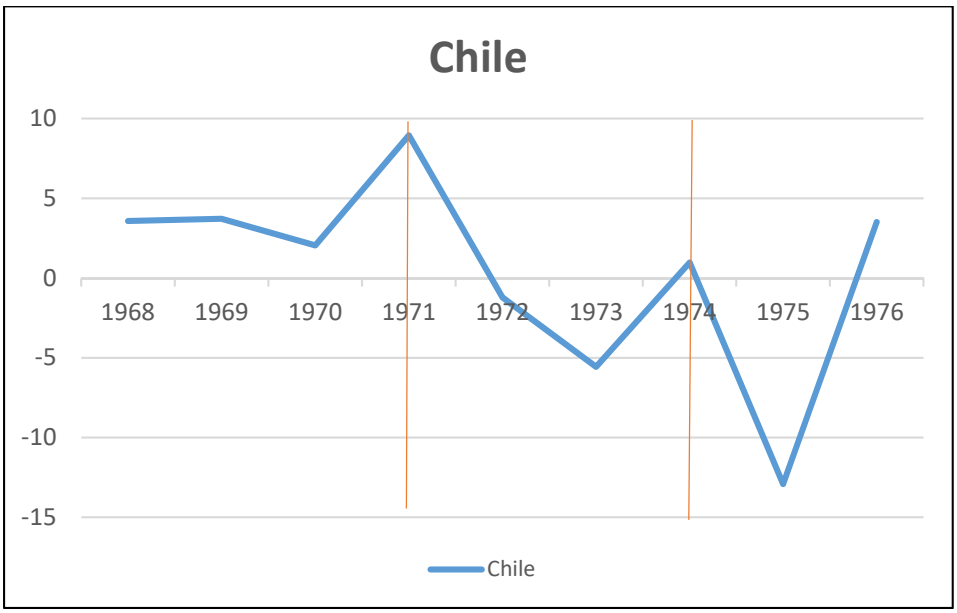

FIGURE 1A: Real GDP Growth, Chile, 1968-1976 (Source: Banco Central de Chile)

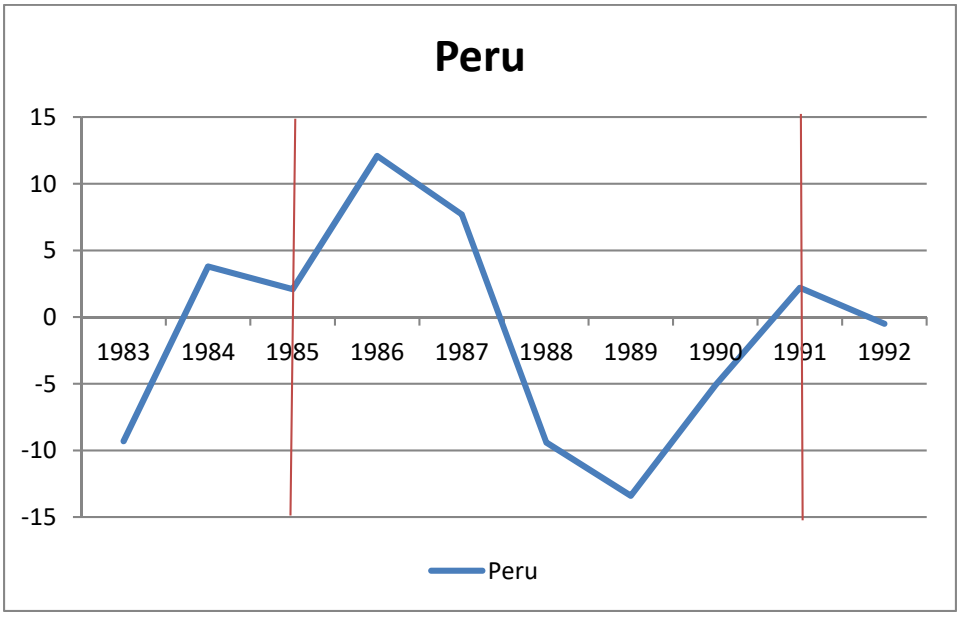

FIGURE 1B: Real GDP Growth, Peru, 1983-1992 (Source: IMF)

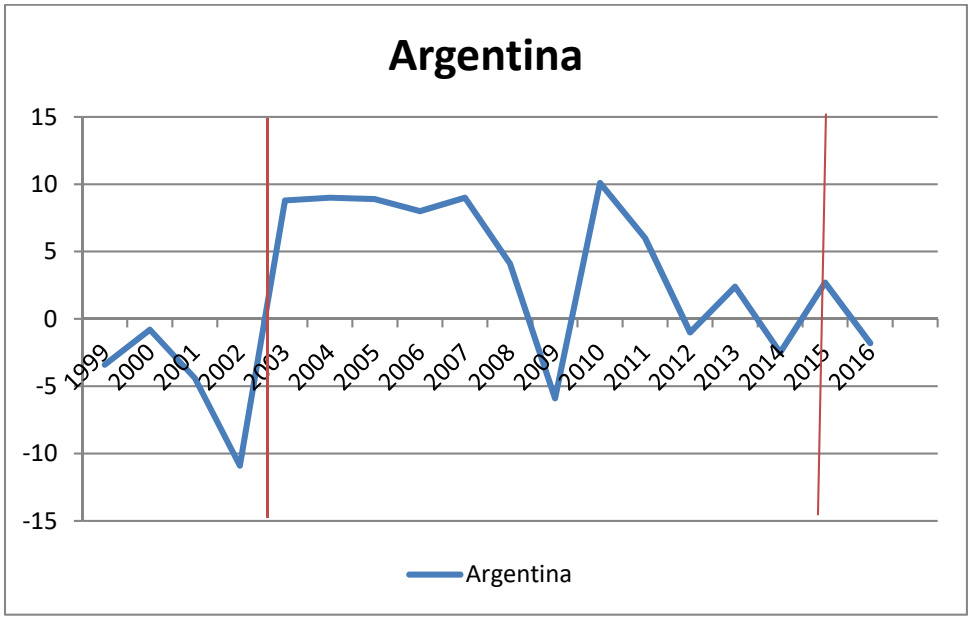

FIGURE 1C: Real GDP Growth, Argentina, 1999-2016 (Source: IMF)

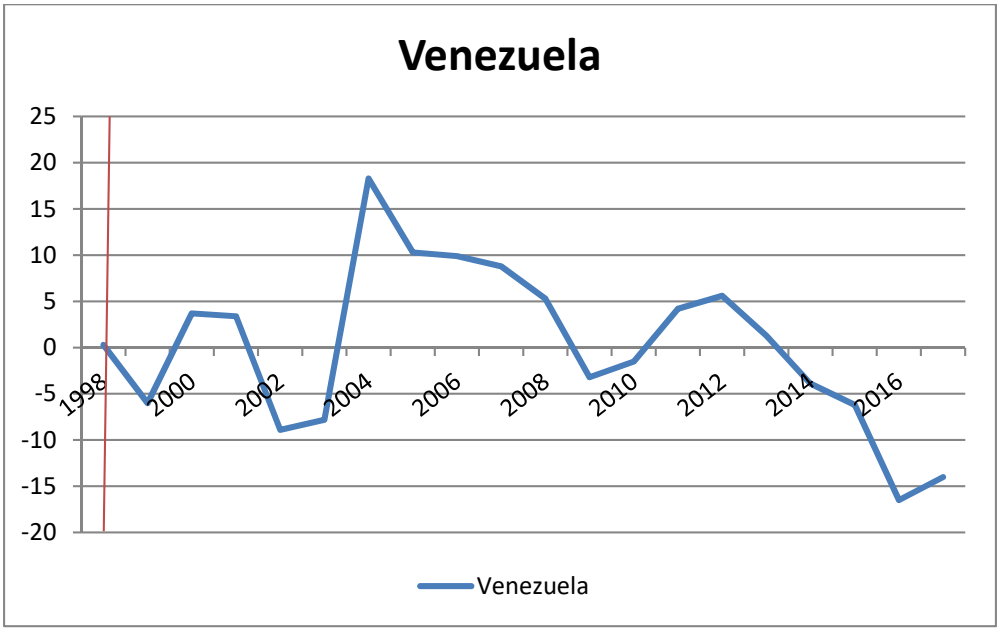

FIGURE 1D: Real GDP Growth, Venezuela, 1998-2017 (Source: IMF)

TABLE 1

Chile, 1968-1976
Macroeconomic Indicators

	Public Sector Balance as % GDP	Consoli-dated Public Sector Balance as % GDP	Rate of growth of money Supply (Base) (%)	Inflation % Per Annum (Average)	Current account balance as % GDP	Real GDP Growth % per year
1968	-2.4	NA	36.80	27.94	-2.16	3.60
1969	-1.5	NA	43.61	29.34	-0.08	3.71
1970	-2.9	-6.69	66.15	34.93	-1.27	2.05
1971*	-11.2	-15.28	135.88	22.13	-2.36	8.96
1972*	-13.5	-24.53	178.25	163.43	-4.31	-1.21
1973*	-24.6	-30.40	365.03	508.05	-8.81	-5.57
1974	-10.5	NA	319.58	375.88	-3.71	0.97
1975	-2.6	NA	293.73	340.70	-0.01	-12.91
1976	-2.3	NA	271.56	174.32	0.002	3.52

Source: Edwards and Edwards (1991); Banco Central de Chile; Larrain and Meller (1991).

TABLE 2

Peru, 1983-1992
Macroeconomic Indicators

	Public Sector Balance as % GDP	Rate of growth of money Supply (Base) (%)	Inflation % Per Annum (Average)	Current account balance as % GDP	Real GDP Growth % per year
1983	-11.6	115.1	111.1	-6.8	-9.3
1984	-7.9	142.5	110.2	-1.4	3.8
1985*	-3.7	214.9	163.4	0.3	2.1
1986*	-7.8	39.4	77.9	-5.4	12.1
1987*	-10.1	110.5	85.8	-4.3	7.7
1988*	-11.5	568.2	667	-5.4	-9.4
1989*	-11.3	1,436.6	3398.3	-0.5	-13.4
1990*	-8.9	7,782.5	7481.7	-5.1	-5.1
1991	-2.9	162.2	409.5	-4.5	2.2
1992	-4.0	95.8	73.5	-5.4	-0.5

Source: International Monetary Fund, except for fiscal deficit which comes from Martinelli and Vega (2018).

TABLE 3

Argentina, 1999-2016
Macroeconomic Indicators

	Public Sector Balance as % GDP	Rate of growth of money supply (Base) (%)	Inflation (official) % Per Annum (Average)	Inflation (adjusted) % Per Annum (Average)	Current account balance as % GDP	Real GDP Growth % per year
1999	-3.8	0.8	-1.2	-1.2	-3.9	-3.4
2000	-3.3	-8.8	-0.9	-0.9	-3	-0.8
2001	-5.4	17.9	-1.1	-1.1	-1.4	-4.4
2002	-2.1	69.8	25.9	25.9	7.9	-10.9
2003*	1.2	66.3	13.4	13.4	5.8	8.8
2004*	3.5	20.7	4.4	4.4	1.8	9
2005*	3.2	1.2	9.6	9.6	2.5	8.9
2006*	1.3	42.8	10.9	10.9	2.8	8
2007*	-0.1	23.1	8.8	25.7	2.1	9
2008*	0.2	17.6	8.6	23.0	1.5	4.1
2009*	-2.6	18.6	6.3	14.8	2.2	-5.9
2010*	-1.4	32.9	10.5	25.7	-0.4	10.1
2011*	-2.7	24.0	9.8	22.5	-1	6
2012*	-3	41.0	10.2	25.2	-0.4	-1
2013*	-3.3	28.5	10.6	27.9	-2.1	2.4
2014*	-4.3	19.2	22.1	38.5	-1.6	-2.5
2015*	-5.8	43.8	24.2	27.8	-2.7	2.7
2016	-6.4	39.2	36.3	40.7	-2.7	-1.8

Source: International Monetary Fund, except “adjusted inflation,” from Bolsa de Comercio de Santa Fé.

TABLE 4

Venezuela, 1998-2017
Macroeconomic Indicators

	Public Sector Balance as % GDP	Rate of growth of money supply (Base) (%)	Inflation % Per Annum (Average)	Current account balance as % GDP	Real GDP Growth % per year
1998*	-4.5	18.3	35.8	-4.8	0.3
1999*	0.7	32.9	23.6	2.2	-6
2000*	4.4	14.8	16.2	10.1	3.7
2001*	-4.6	12.0	12.5	1.6	3.4
2002*	-1.5	19.5	22.4	8	-8.9
2003*	0.2	24.1	31.1	14.1	-7.8
2004*	2.5	59.3	21.7	13.8	18.3
2005*	4.1	31.8	16	17.8	10.3
2006*	-1.6	36.6	13.7	14.9	9.9
2007*	-2.8	89.8	18.7	6.1	8.8
2008*	-3.5	48.0	31.4	10.8	5.3
2009*	-8.7	27.9	26	0.2	-3.2
2010*	-9.2	24.5	28.2	1.9	-1.5
2011*	-10.6	23.0	26.1	4.9	4.2
2012*	-14.6	50.1	21.1	0.8	5.6
2013*	-14.1	43.0	43.5	2	1.3
2014*	-16.5	--	57.3	2.3	-3.9
2015*	-17.6	--	111.8	-6.6	-6.2
2016*	-17.8	--	254.4	-1.6	-16.5
2017 *	-31.8		1087.5	2	-14.0

Source: International Monetary Fund

TABLE 5

Evolution of Real Wages in Latin American Populist Episodes

	Index of real wages at beginning of populist episode	Index of real wages at the end of populist episode
Chile (1970-1973)	100	61
Peru (1985-1990)	100	59
Argentina (2003-20015)	100	113
Venezuela (1998-)*	100	79*

Source: See text.

*The data for Venezuela are for 2013. More recent reliable data are not available.